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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,683	09/12/2003	Takashi Ebisawa	Q77412	7698

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EXAMINER	
PATEL, JAYESH A	
ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/31/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/660,683	EBISAWA, TAKASHI	
	Examiner	Art Unit	
	Jayesh A. Patel	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. JP2002-266317.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/12/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Morimatsu (JP 11-150659 or US 20020008879 A1) hereafter Morimatsu. For the purpose of the explanation, the US publication (US 20020008879 A1) is used. Also Morimatsu is silent about the specific word Character or thin line pixels, the system and method as disclosed is capable of enhancing and processing Text or character pixels or any pixel **(Page 1 Para 0001)**.

1. Regarding Claim 1,Morimatsu discloses, an image processing system which comprises an object pixel detecting means which determines whether relevant pixels in the character image information obtained by reading an original on which characters have been recorded are object pixels to be subjected to enhancement processing and carries out enhancement processing on pixels determined to be object pixels, thereby carrying out edge enhancement processing on the character image information, wherein the improvement comprises that the object pixel detecting means in **(Fig 1)** comprises a density

judgment section in **(Fig 3 a and b and Fig 4 s240,s250)** which determines the relevant pixel to be a prospective object pixel **(Pixel 121 in Fig 2)** when the density **(DL or DR)** of the relevant pixel is higher than a first threshold value on **(Page 3 Para 0067,Fig 4 s270)** higher than the density of the background of the border of the original and not higher than the density of a thinnest line in lines which form said characters and is not higher than a second threshold value on **(Page 3 Para 0068,Fig 4 s260)** not lower than the density of a thinnest line in lines which form said characters, and a thin line image detecting section which determines the relevant pixel to be a thin line pixel forming a part of a thin line image at **(Fig 1 Element 108 and Page 2 Para 0039-0054)**, and determines that the relevant pixel is an object pixel when the density judgment section determines the relevant pixel to be a prospective object pixel and the thin line image detecting section **(Figs 1-4 and Page 2 Para 0039-0054)** determines the relevant pixel to be a thin line pixel at **(Fig 4 and Para 0060-0068)**. The step s250 determines the object pixel by comparing the densities of the object (target pixel 121) pixel against the densities of the adjacent pixels (Pixels 125 and 126) by threshold operation. Also the threshold values are for example purposes only and can be set depending on the task as mentioned in Para 0082 any possible threshold values can be possible. The difference and threshold steps of the densities of the pixels help in determining target pixel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimatsu in view of Huang **(US 6175659)** hereafter Huang.

2. Regarding Claim 2, Morimatsu discloses an image processing system as defined in claim 1. Morimatsu however does not disclose the relevant pixels which have not been determined to be an object pixel are subjected to a weak enhancement processing the degree of enhancement of which is weaker than that of the enhancement processing for said edge enhancement processing.

Huang discloses in **(Fig 1 Col 4 Lines 16-40 and Col 5 Lines 25-30)** an adaptive edge enhancement device 1 depending the threshold modes selected. Huang also disclose the relevant pixels which have not been determined to be an object pixel are subjected to a weak enhancement processing the degree of enhancement of which is weaker than that of the enhancement processing for said edge enhancement processing at (**Col 5 Lines 25-30**). Huang further discloses that the selection of the enhancement modes for the entire image can be fixed by the users in a user defined operating state or can be done dynamically for each pixel according to the neighboring background pixel in an adaptive operating state. Thus a weak enhancement can be fixed for the non –

object pixels than the pixels identified as object pixels. The method and apparatus as disclosed by Huang can provide viewers with better image quality than conventional edge enhancement techniques **(Col 1 Lines 30-35)**. The method and apparatus as disclosed by Morimatsu can be modified to operate adaptively with different levels of enhancements depending on the detecting of the pixels (by threshold) operation. Therefore it would have been obvious, for one of ordinary skill in the art at the time the invention was made, to use the teachings of Huang in the image processing apparatus and method of Morimatsu for the benefits of the above reasons.

3. Regarding Claim 3, Morimatsu discloses an image processing system as defined in claim 1 which further comprises a density difference calculating means which calculates the difference in density between a non-object pixel and the surrounding pixels adjacent to the non-object pixel on **(Page 3 Para 0065)**. Morimatsu however does not disclose carrying out a weak enhancement processing on the non-object pixel when the difference in density is larger than a predetermined third threshold value and does not carry out the weak enhancement processing when the difference in density is not larger than the third threshold value.

Huang also disclose density difference calculator and comparator at (Col 6 Lines 16-30). Huang further discloses carrying out a weak enhancement and no enhancement at **(Col 4 Lines 27-47)** depending on the difference level threshold.

For threshold densities between TH2 and TH3 a th3 or F3 (weak enhancement) is selected **(Col 5 Lines 65-67)** and F4 or th4 (No enhancement) at **(Col 6 Lines 1-4)**. If the new pixel value is equal to the original pixel value than No enhancement is performed **(Col 4 Lines 40-43)**. The benefits of the combination are also explained in Claim 2.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayesh A. Patel whose telephone number is 571-270-1227. The examiner can normally be reached on M-F 7.00am to 4.30 pm (5-4-9). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jayesh Patel
1/23/07

JINGGE WU
SUPERVISORY PATENT EXAMINER